

Remarks

Upon entry of the foregoing amendments, claims 37-46 and 48-58 will be pending. Claim 47 has been canceled. In view of the amendments and following remarks, Applicants respectfully request reconsideration by the Examiner, and advancement of the application to allowance.

Continuing Data and Abstract

The Examiner requested the continuing data be amended to reflect the current status of the parent application. Applicants have amended the continuing data to satisfy the Examiner's request.

The Examiner also requested the Abstract be more descriptive of the invention. Accordingly, Applicants have amended the Abstract to satisfy the Examiner's request.

35 U.S.C. § 112

The Examiner rejected claim 58 under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants submit amended claim 58 to improve the form of the claim.

The Examiner also rejected claims 37-58 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement and claims 37-46 and 48-58 under 35 U.S.C. § 112, first paragraph, for lack of enablement. Applicants submit amended claims 37 and 58 to satisfy the written description and enablement requirement. Support for the amendments can be found at, for example, page 5.

35 U.S.C. § 102

The Examiner rejected claims 37, 38 and 48-58 under 35 U.S.C. § 102(b) as being anticipated by Davis et al. ('246) or Ward et al. ('623 or '981). Davis et al. and Ward et al. disclose the use of boric acid as a flame retardant in rebonded foam products. Neither

Davis et al. nor Ward et al. disclose rebonding foam crumb with a polyurethane prepolymer prepared from an acidified isocyanate treated with an acid to achieve about 100 ppm to about 4000 ppm of acid in the prepolymer as claimed in claim 37. Additionally, neither Davis et al. nor Ward et al. disclose a process for producing a rebonded foam product using an acidified polyurethane prepolymer adhesive prepared from MDI polyisocyanate, acid, and polyol to achieve a concentration of about 100 ppm to about 4000 ppm of acid in the prepolymer as claimed in claim 58. Applicants respectfully request the rejections under 35 U.S.C. § 102(b) be withdrawn.

35 U.S.C. § 103

The Examiner rejected claims 37-58 under 35 U.S.C. § 103(a) as being unpatentable over Blair et al. ('703) in view of Lee et al. ('793) or Laqua et al. ('317) or Cenker et al. ('288) or EP 856551 or Oertel (pages 8, 96 and 97). The Examiner states Blair et al. discloses rebonding foam particles using an isocyanate based binder but fails to disclose the use of an acid to acidify the isocyanate component. However, the Examiner asserts it would have been obvious to acidify the isocyanate binder component to tailor the reactivity of the isocyanate and potlife of the binder compositions based on the teachings of the secondary references.

Applicants submit that the secondary references Lee et al., Laqua et al., Cenker et al., EP 856551 and Oertel are not properly combined with Blair et al. because none of the secondary references relate to bonding foam crumb.

Lee et al. teach the use of methane sulfonic acid to stabilize the activity of an amine catalyst in a prepolymer system used in orthopedic casting applications. Laqua et al. teach the use of one or a combination of antioxidants, peroxide cleaving and/or

reducing agents, and acids for preventing the oligomerization and discoloration of hexamethylene diisocyanate. Cenker et al. teach the preparation of carbodiimide foams using TDI having acid levels not applicable for urethane foam applications. Although Oertel generally teaches the addition of an acid to isocyanate to inhibit its reaction with highly reactive polyols or amines in the preparation of prepolymers, EP 856551 teaches the difficulties one encounters when acid is simply added to an isocyanate material in the preparation of prepolymers including loss of isocyanate reactivity, toxicity concerns and loss of effectiveness due to high volatility.

The secondary references say nothing about the particular requirements of rebonding foam crumb or what one could expect when a polyurethane prepolymer binder, prepared from an acidified isocyanate to achieve an acid concentration of about 100 ppm to about 4000 ppm in the prepolymer, is used to bind foam crumb. The claims as amended are therefore non-obvious over Blair et al. and the secondary references.

Assuming, *arguendo*, that there is a prima facie case, Applicants respectfully submit that it would be rebutted by the test data. In particular, Applicants have surprisingly found the amount of poorly-bonded foam crumb can be significantly reduced when a polyurethane prepolymer, prepared in the presence of acid to achieve a low level of acid in the prepolymer, is used as a binder to rebond foam crumb. As demonstrated in Table 1, there is marked improvement in the use of a prepolymer binder containing an acid level as low as 180 ppm. Table 2 further demonstrates this unexpected marked improvement when prepolymers containing acid concentrations of 355 ppm to 2000 ppm are used to bind foam crumb. Neither Blair et al. nor the secondary references disclose or suggest this unexpected finding.

For all the reasons above, Applicants respectfully request the rejection under 35 U.S.C. § 103 (a) be withdrawn.


Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is now in condition for allowance, and respectfully request issuance of a Notice of Allowance directed towards the pending claims.

Should any fee be due in connection with the filing of this document, the Commissioner for Patents is hereby authorized to deduct said fee from Huntsman Corporation Deposit Account No. 08-3442.

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Respectfully Submitted,



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